REMARKS

Applicants respectfully request reconsideration and allowance of the pending claims.

I. Status of the Claims

Upon entry of this amendment, claims 3, 9-14, 19, 43-49, 54, 59, and 64 remain pending. Claims 65-80 are new.

Claims 3, 19, 43, 49, 54, 59, and 64 have been amended to require a minimum platinum concentration of at least about 1 atomic percent, which is supported by paragraph [0034] of the published application. Claim 12 has been amended to incorporate the requirements of original claim 6. Claims 19 and 43 have been amended to clarify the nickel concentration in terms of atomic percent. See paragraph [0040].

New claims 65 through 80 are supported by paragraphs [0034] (for the minimum of 2 atomic percent) and [0037] (for the minimum of 5 atomic percent).

II. Claim Rejections Under 35 U.S.C. §112, second paragraph

Reconsideration is requested of the rejection of claims 12-14 as being indefinite. Claim 12 has been amended to incorporate the requirements of its base claim 6. To the extent that claim 12 clearly defines the subject matter of the invention, claims 12-14 fully satisfy the requirements of §112, second paragraph, and applicants request withdrawal of the rejection.

III. Claim Rejections Under 35 U.S.C. §102(b)

Reconsideration is requested of the rejection of claims 3 and 44-48 as being anticipated by Schmidt (U.S. 6,309,758).

Claim 3 is directed to a catalyst for use in oxidation or reduction reactions comprising platinum, chromium, copper and nickel, wherein the concentration of platinum is at least about 1 atomic percent and less than 40 atomic percent.

Schmidt et al. discloses a porous catalyst comprising at least 85 wt.% of a base metal. See Col. 5, lines 4-34 of Schmidt. "Base metals" are defined in Col. 3, lines 43-53, including iron, nickel, cobalt, copper, and mixtures thereof. The porous catalyst may comprise "a minor amount (up to about 15 wt.%, preferably up to about 12 wt.%) of other metal(s) such as chromium, titanium, molybdenum, zinc, zirconium or mixtures thereof as well as residual aluminum." See Col. 5, lines 4-34 of Schmidt. Finally, the porous catalyst may be doped with a precious metal, such as palladium, platinum, ruthenium, rhodium, rhenium, iridium, and osmium, in an amount up to 1.5 wt.%, but preferably up to 1 wt.%, and most preferably up to 0.5 wt.%. These concentrations are stated to be "weight concentrations." See Col. 6, lines 1-24, in particular line 16.

In order to directly compare Schmidt et al.'s catalyst with catalyst defined by claim 3, Schmidt et al.'s concentrations in terms of weight percent need to be converted to atomic percent. Calculations for two alloys that comprise nickel, chromium, and platinum in which the platinum concentration is at Schmidt's maximum weight limit are shown below, and the maximum concentration of precious metal (e.g., platinum) in Schmidt's catalysts is less than 0.5 atomic percent in both of these alloys.

(1) Catalyst comprises 83.5 wt.% Ni, 15 wt.% Cr, and 1.5 wt.% Pt.

Step 1. Convert mass of each component per 100 grams to moles:

83.5 grams Ni / 58.693 grams/mol = 1.422657 moles Ni
15 grams Cr / 51.996 grams/mol = 0.288484 moles Cr
1.5 grams Pt / 195.084 grams/mol = 0.007689 moles Pt

Total moles = 1.71883

Step 2. Convert mole amounts to atomic percent

(1.422657 moles Ni / 1.71883 total moles) * 100 = 82.77 atomic %

(0.288484 moles Cr / 1.71883 total moles) * 100 = 16.78 atomic %

(0.007689 moles **Pt** / 1.71883 total moles) * 100 = **0.45 atomic %**

(2) Catalyst comprises 85 wt.% Ni, 12.5 wt.% Cr, and 1.5 wt.% Pt.

Step 1. Convert mass of each component per 100 grams to moles:

85 grams Ni / 58.693 grams/mol = 1.448214 moles Ni
12.5 grams Cr / 51.996 grams/mol = 0.240403 moles Cr
1.5 grams Pt / 195.084 grams/mol = 0.007689 moles Pt

Total moles = 1.69631

Step 2. Convert mole amounts to atomic percent

(1.448214 moles Ni / 1.69631 total moles) * 100 = 85.37 atomic %

(0.240403 moles Cr / 1.69631 total moles) * 100 = 14.17 atomic %

(0.007689 moles **Pt** / 1.69631 total moles) * 100 = **0.45 atomic %**

Since the maximum platinum concentration is less than 0.5 atomic percent in those alloys that are selected to comprise nickel, chromium, and platinum, Schmidt does not anticipate the catalyst defined by claim 3 since the claimed catalyst is required to contain at least about 1 atomic percent platinum.

In view of the foregoing, applicants respectfully request the anticipation rejection of claim 3 be withdrawn.

Claims 44 through 48 depend from claim 3 and are patentable for the same reasons as claim 3 and by virtue of the additional requirements therein.

IV. Claim Rejections Under 35 U.S.C. §103(a)

Reconsideration is requested of the rejection of claims 19, 43, 49, 54, 59, and 64 as being obvious over Schmidt (U.S. 6,309,758) in view of Narayan et al. (U.S. 4,717,774) and Capuano et al. (U.S. 5,126,213).

Claim 19 is directed to a supported electrocatalyst powder for use in electrochemical reactor devices, the supported electrocatalyst powder comprising a catalyst comprising platinum at a concentration of at least about 1 atomic percent and less than 40 atomic percent, chromium at a concentration of no greater than 30 atomic percent, and nickel at a concentration of at least 35 atomic percent, and electrically conductive support particles upon which the catalyst is dispersed. Claim 43 differs from claim 19 in that the nickel concentration is at least 45 atomic percent. Claims 49, 54, 59, and 64 also define the platinum concentration as being at least about 1 atomic percent and less than 40 atomic percent.

The disclosure of the Schmidt reference is set forth in part above. Narayan et al. is relied on for showing that Schmidt's materials may be supported on a carrier. Narayan et al. disclose supported nickel catalyst for using in reducing aromatic nitrates to aromatic amines. This reference does not disclose a Pt-Cr-Ni/Cu catalyst. Capuano et al. is relied on for showing that Schmidt's materials are expected to function as electrocatalysts. Capuano et al. disclose ternary catalysts

comprising precious metal, chromium, and copper. The precious metal can be platinum. See Col. 2, lines 47-58.

For the reasons stated above, Schmidt does not disclose a catalyst material comprising chromium, nickel, and platinum in which the platinum content is at least about 1 atomic percent. Accordingly, the Office must support its *prima facie* obviousness rejection with some reason with an underpinning in the art itself why the platinum concentration would have been obvious, as endorsed by MPEP §2142:

> "The key to supporting any rejection under 35 U.S.C. 103 ***is the clear articulation of the reason(s) why the claimed invention would have been obvious***. The Supreme Court in *KSR International Co. v. Teleflex Inc.*, 550 U.S. ___, ___, 82 USPQ2d 1385, 1396 (2007) noted that the analysis supporting a rejection under 35 U.S.C. 103 should be made explicit. The Federal Circuit has stated that "rejections on obviousness cannot be sustained with mere conclusory statements; instead, ***there must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness***." *In re Kahn*, 441 F.3d 977, 988, 78 USPQ2d 1329, 1336 (Fed. Cir. 2006). See also *KSR,* 550 U.S. at ___ , 82 USPQ2d at 1396 (quoting Federal Circuit statement with approval)."

Herein, catalyst materials having a concentration of at least 1 atomic percent platinum would not have been obvious since Schmidt explicitly states that the precious metal component is a "'Dopant precious metal'...present in small quantities on the surface area of a porous, particulate base metal..." See Col. 3, starting at line 65. A "dopant" is well understood in the materials arts to be a material present in low concentration.

Schmidt additionally teaches away from applicants' claimed minimum platinum concentration and toward lower precious metal dopant concentrations at Col. 6, lines 15-24, where he expresses preferred and most preferred concentrations that are even lower

than 1.5 wt% (0.45 atomic percent), such as 1 wt. % or even 0.5 wt.%. See MPEP §2144.05 Part III. "A *prima facie* case of obviousness may also be rebutted by showing that the art, ***in any material respect***, teaches away from the claimed invention. *In re Geisler*, 116 F.3d 1465, 1471, 43 USPQ2d 1362, 1366 (Fed. Cir. 1997)." Herein, the expressed preference toward lower concentrations is a material teaching away from applicants' claimed minimum platinum concentration.

Since the combination of references does not disclose any catalyst materials meeting all of the requirements of the claims, in particular the platinum concentration of at least 1 atomic percent, and since the references teach away from the minimum concentration and toward even lower precious metal dopant concentrations, the supported catalyst materials defined by the various claims are patentable over the cited combination of references. In view thereof, applicants respectfully request the rejection of these claims be withdrawn.

V. Allowable Subject Matter

Applicants acknowledge the allowance of claims 9-11.

Applicants acknowledge that claims 12-14 would be allowable if rewritten to overcome the §112 rejection. To the extent that this has been done, applicants submit that claims 12-14 are in condition for allowance.

VI. New Claims

New claims 65-80 require the minimum platinum concentration to be at least 2 atomic percent, or at least 5 atomic percent. Since Schmidt discloses catalyst in which the platinum dopant concentration is less than 0.5 atomic percent, with preferred

dopant concentrations that are even lower, new claims 65-80 are submitted to be patentable over the prior art cited herein.

CONCLUSION

In view of the foregoing, applicants respectfully request reconsideration and allowance of the pending claims.

Applicants do not believe that a fee is required for the filing of this response, as it is being submitted within the three-month shortened statutory period for reply. Should applicants be incorrect, the Commissioner is hereby authorized to charge the necessary fee to Deposit Account No. 19-1345.

Respectfully submitted,

/paul fleischut/

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